



# *Bayer/P4 Soda Springs CERCLA Update*

Soda Springs, Idaho



EPA/IDEQ Update  
January 29, 2020





# Agenda

*Conference Call January 29, 2020*

0930-0935: Introductions

0935-0940: Schedule Update (Jason Maughan)

0940-1030: RI Status Update/Overview including UBZ-1&2 Update and UBZ-3&4 Update (David Banton)

1030-1045: CERCLA/NPDES Integration (Randy Cooper)

1045-1100: Se Demo Unit Update (Jason Maughan)

1100-1115: Open Discussion & Planning for face-to-face (Group)

Invitees: Kathy Cerise (EPA), Stan Christensen (ID EQ), Randy Cooper (Bayer), Jason Maughan (Bayer), David Banton (Golder & Associates)

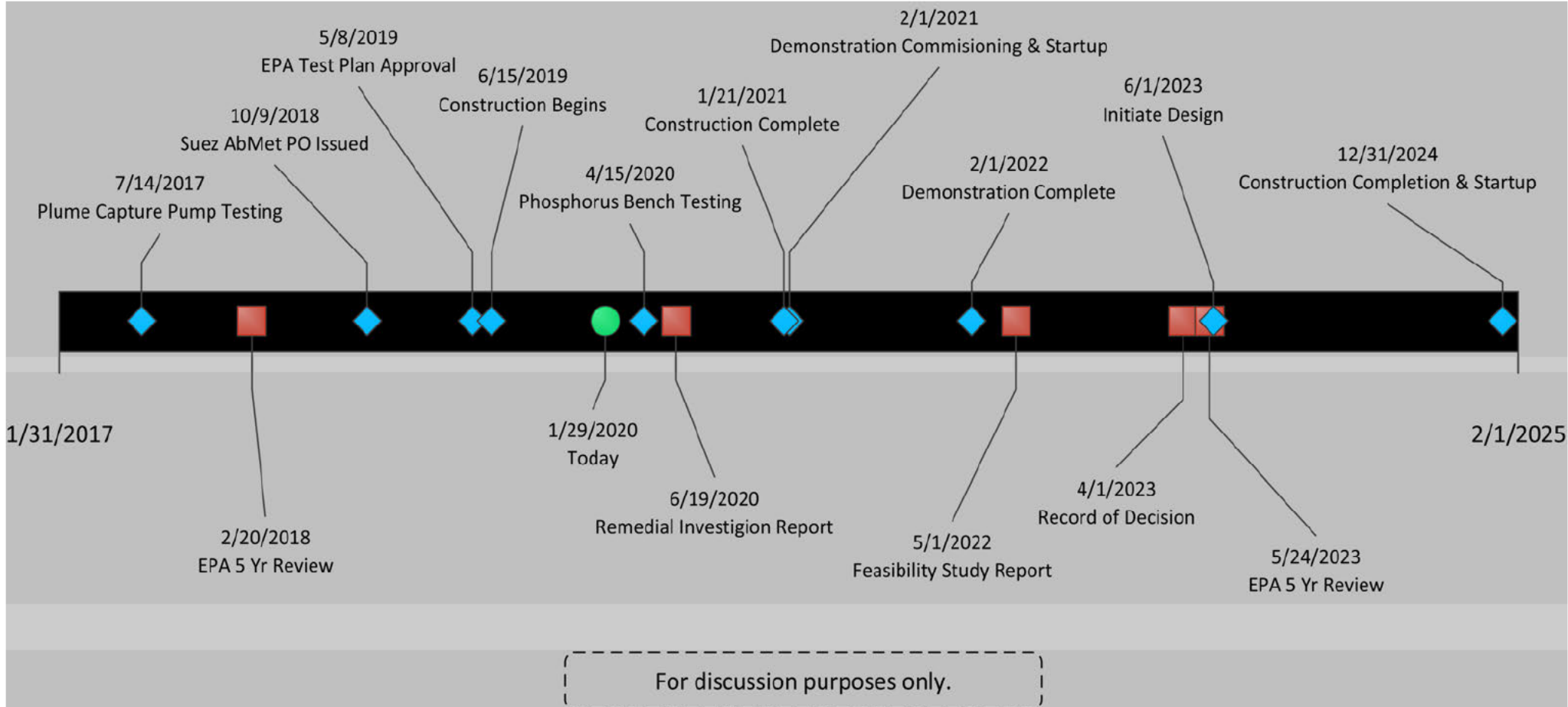


# *Project Schedule*





# Project Timeline







# *RI Update*

UBZ-1 & UBZ-2  
UBZ-3 & UBZ-4





# UBZ-1 and UBZ-2

// Annual and Semi-Annual Sampling On-going

// June 2019

// November 2018 and 2019

// Water Quality Changes

// Extended Pumping Test

// July 2017 to present

// Near-continuous pumping:

// TW-58 – BZ-2: 50 to 250 gpm

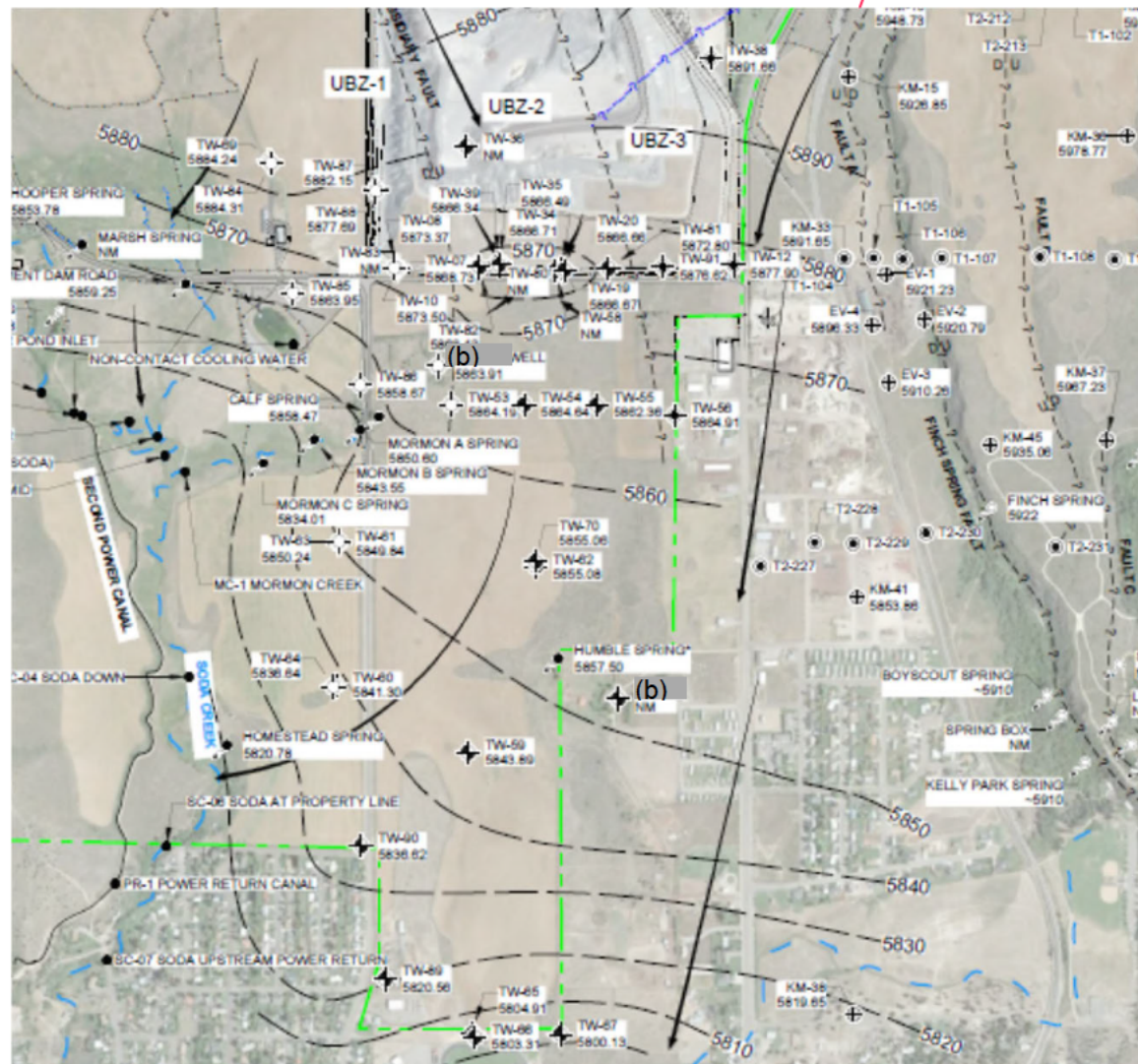
// TW-80 – BZ-2: 50 to 250 gpm

// TW-83 – BZ-1: 15 to 20 gpm

// Measurable water quality improvement in wells and springs

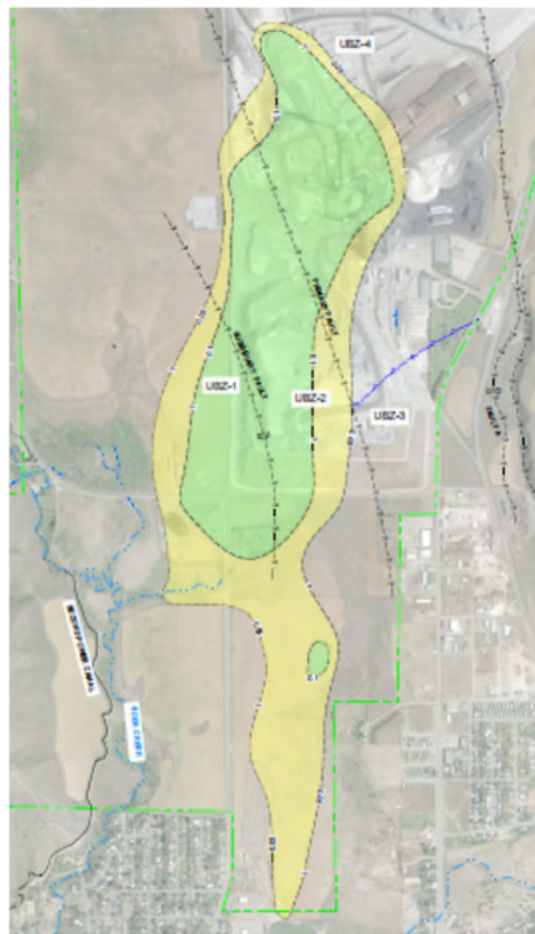


## June 2019 Groundwater Flow South Area





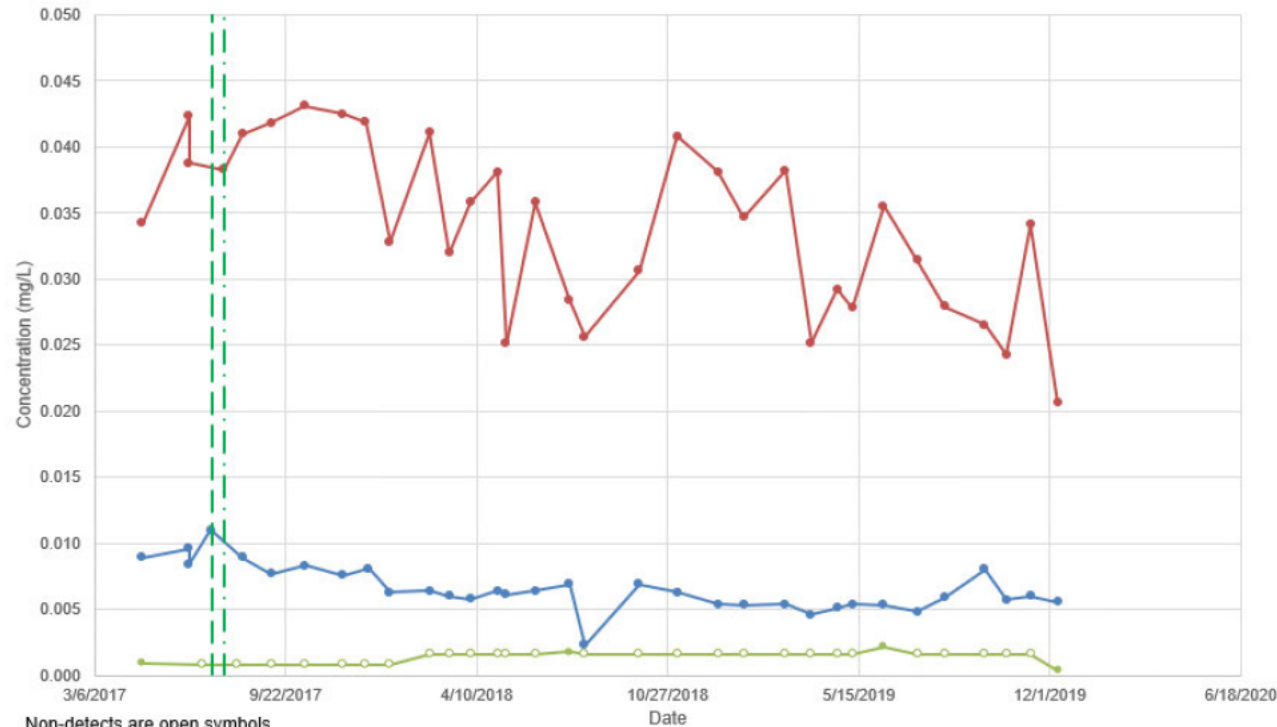
## June 2017 and June 2019 UBZ Selenium







# Pumpback Wells Water Quality – Cadmium



LEGEND

— TW-58

— TW-80

— TW-83

— TW-58 On

— TW-80 On

CLIENT  
BAYER  
C/O P4 PRODUCTION LLC  
SODA SPRINGS PLANT  
CONSULTANT



PROJECT  
EXTENDED PUMPING TEST  
UBZ-1 AND 2

TITLE  
GROUNDWATER AND SURFACE WATER QUALITY  
EXTENDED PUMPING TEST  
CADMIUM

PROJECT NO.  
913-1101-018.009 9A

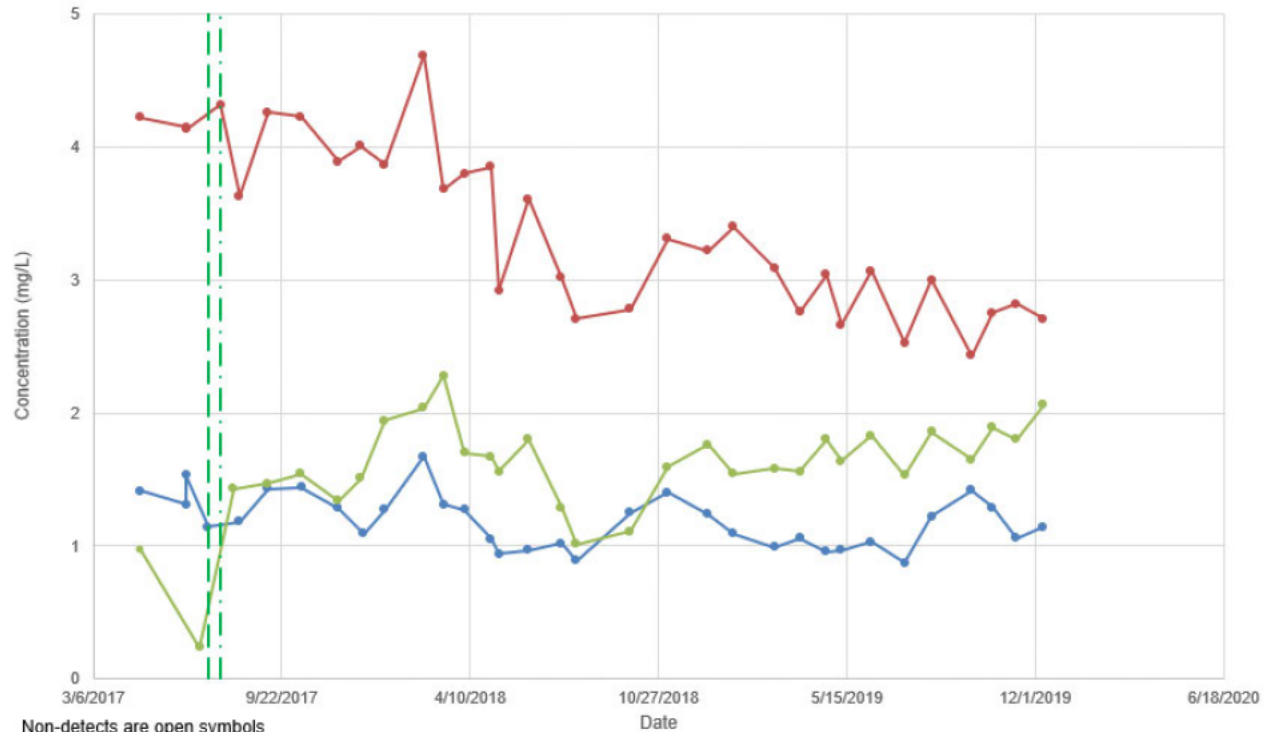
PHASE

REV.  
A

FIGURE  
8-1



# Pumpback Wells Water Quality – Fluoride



LEGEND



CLIENT  
BAYER  
C/O P4 PRODUCTION LLC  
SODA SPRINGS PLANT  
CONSULTANT



PROJECT  
EXTENDED PUMPING TEST  
UBZ-1 AND 2

TITLE  
GROUNDWATER AND SURFACE WATER QUALITY  
EXTENDED PUMPING TEST  
FLUORIDE

PROJECT NO. 913-1101-016.009 9A

REV. A

FIGURE 8-2

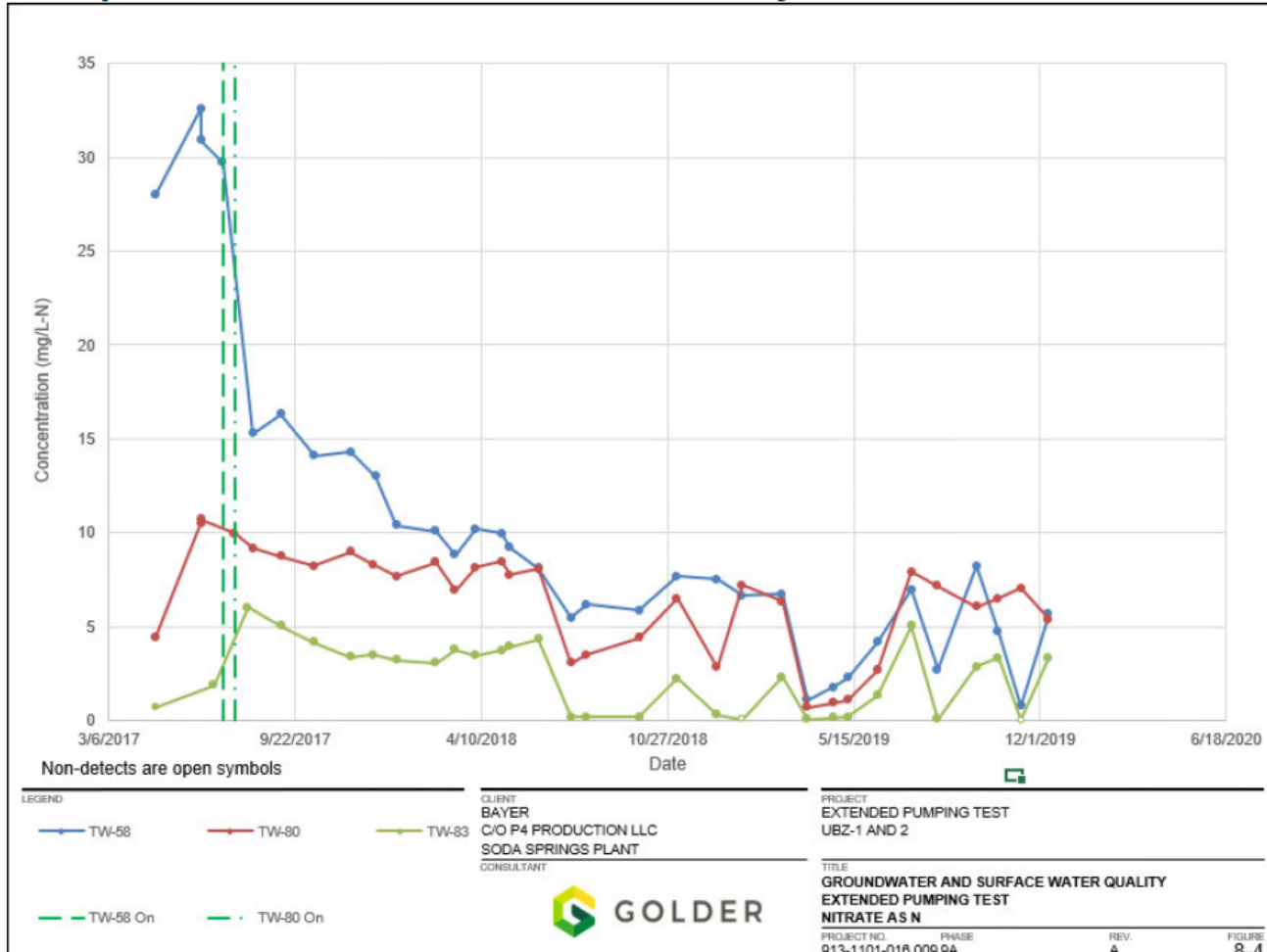


## Pumpback Wells Water Quality – Manganese





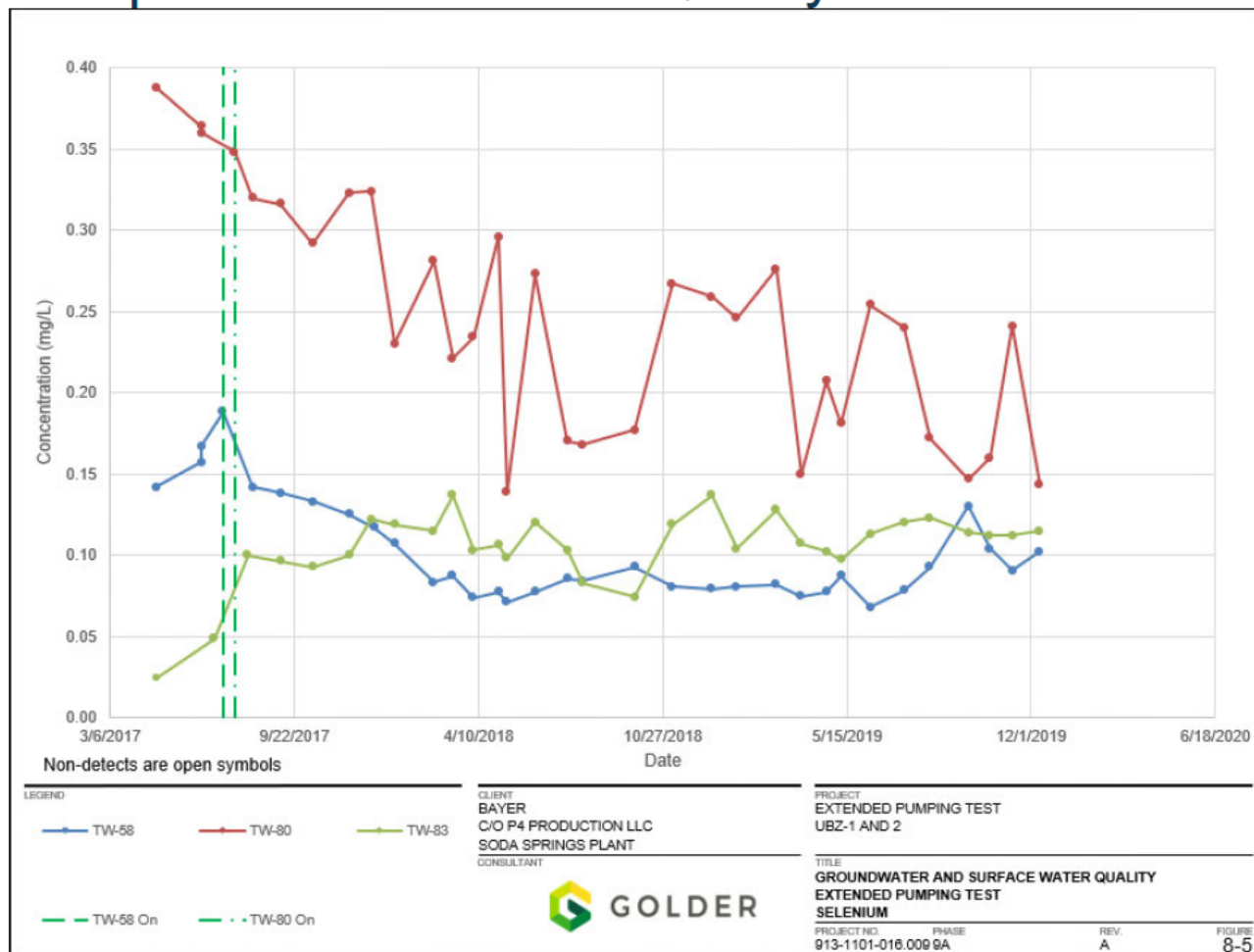
## Pumpback Wells Water Quality – Nitrate





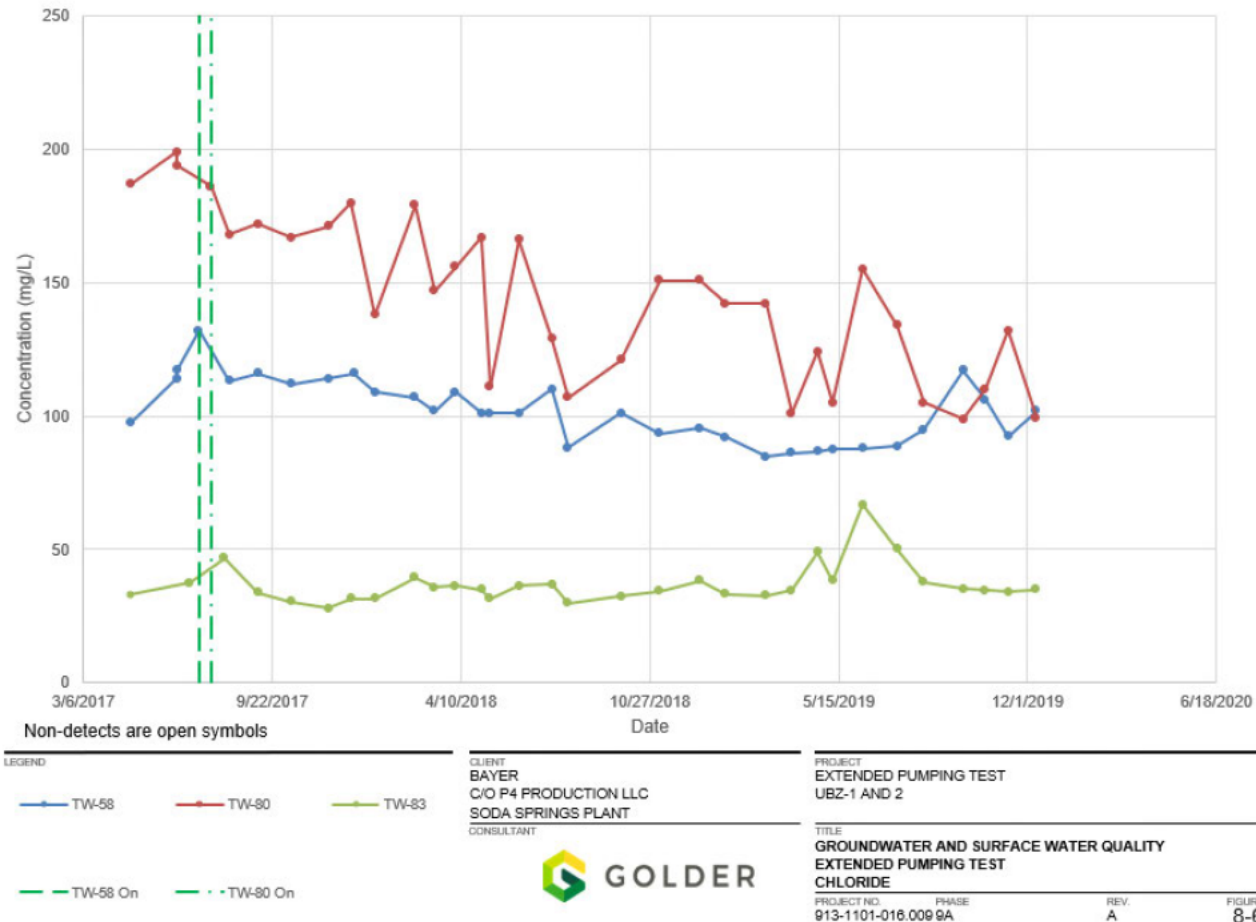


## Pumpback Wells Water Quality – Selenium



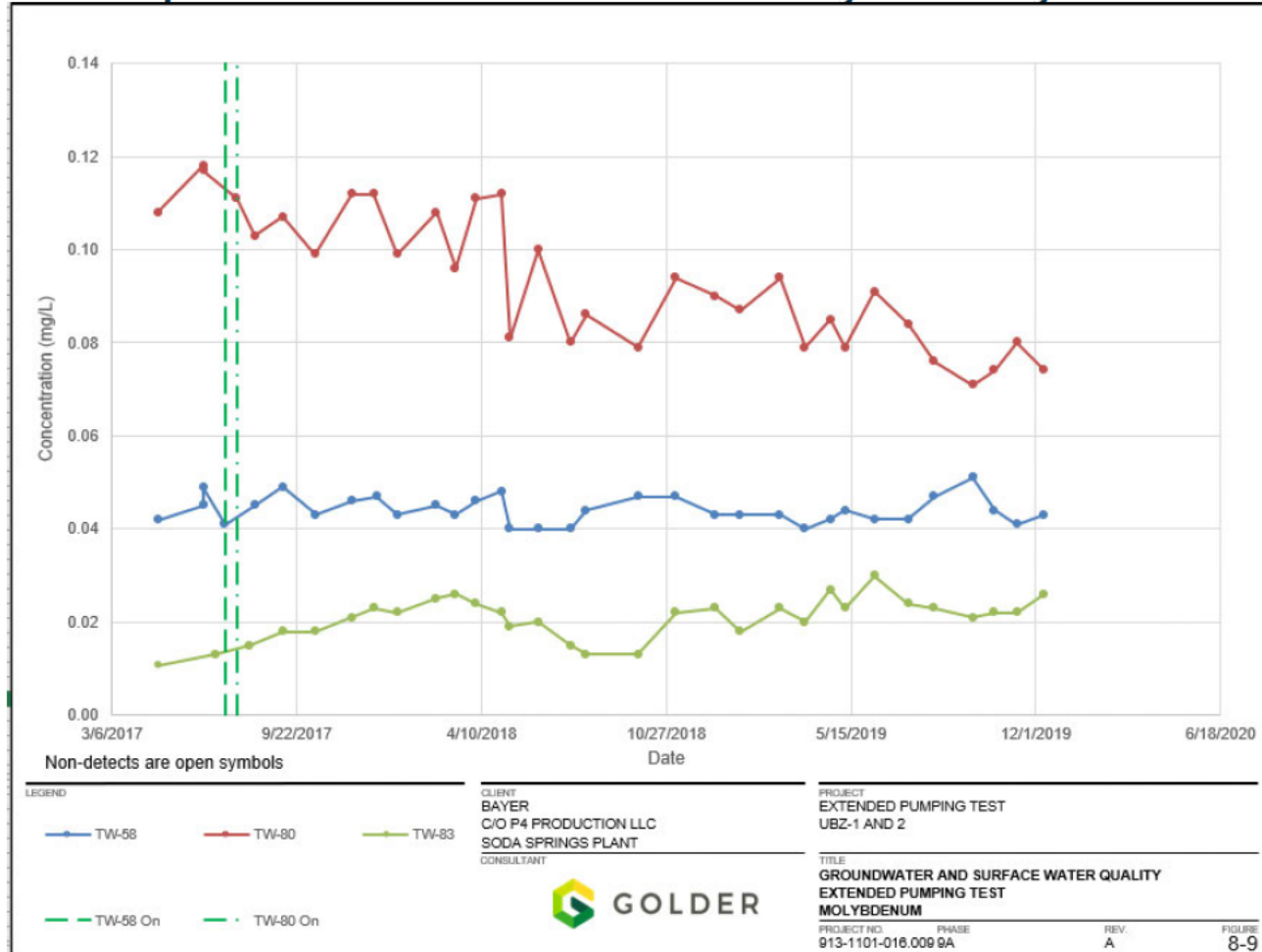


## Pumpback Wells Water Quality – Chloride



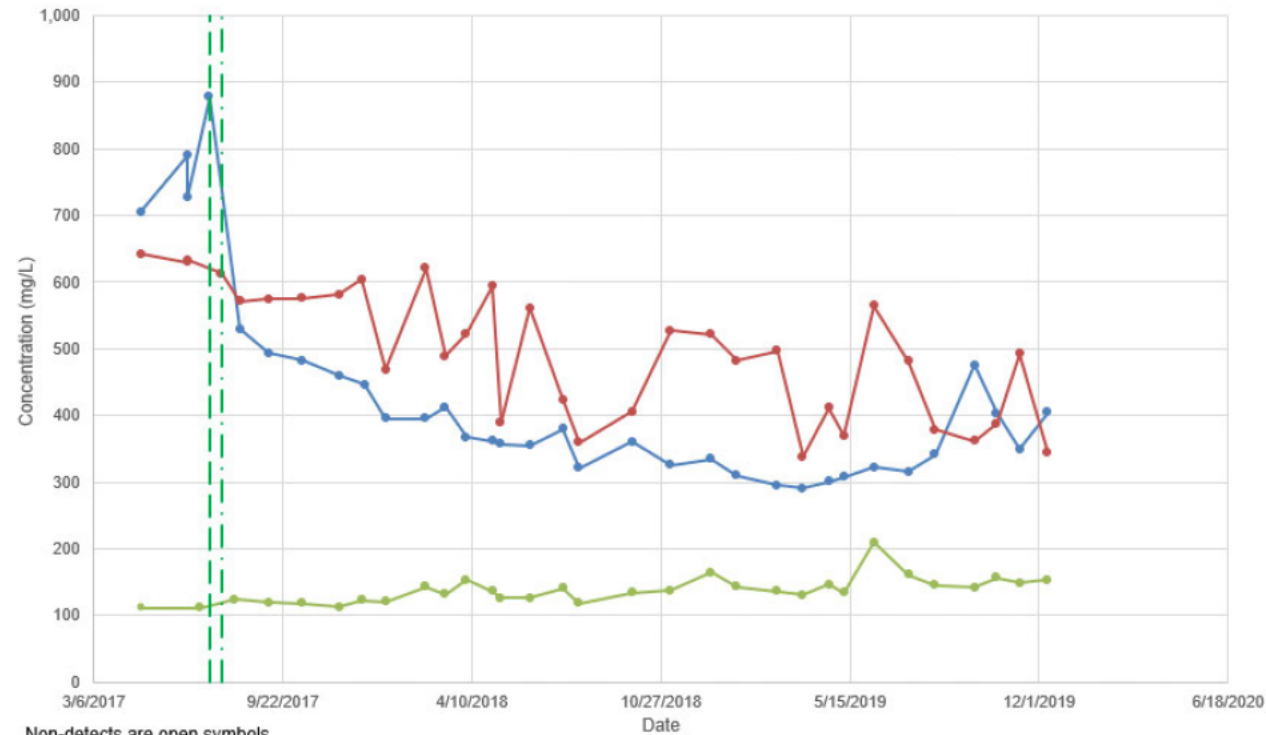


## Pumpback Wells Water Quality – Molybdenum





# Pumpback Wells Water Quality – Sulfate



Non-detects are open symbols

LEGEND

— TW-58

— TW-80

— TW-83

— TW-58 On

— TW-80 On

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SODA SPRINGS PLANT  
CONSULTANT

PROJECT  
EXTENDED PUMPING TEST  
UBZ-1 AND 2

TITLE  
GROUNDWATER AND SURFACE WATER QUALITY  
EXTENDED PUMPING TEST  
SULFATE

PROJECT NO.  
913-1101-016.009 9A

PHASE

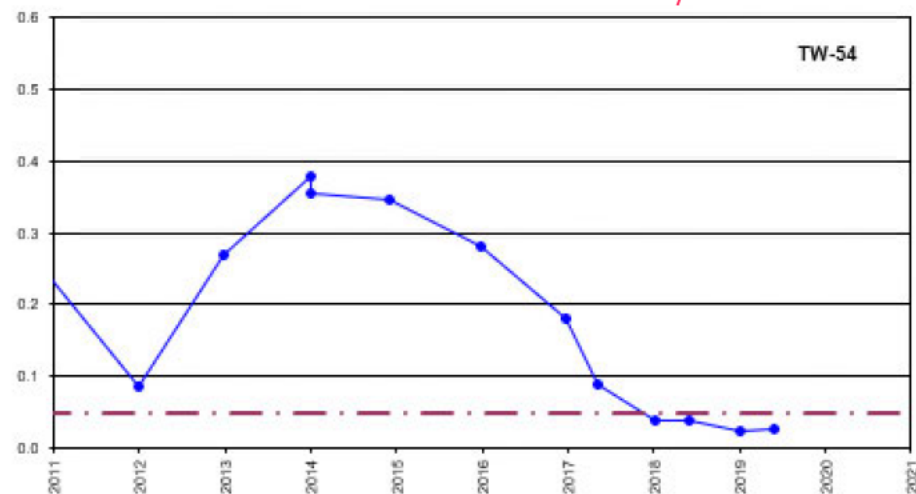
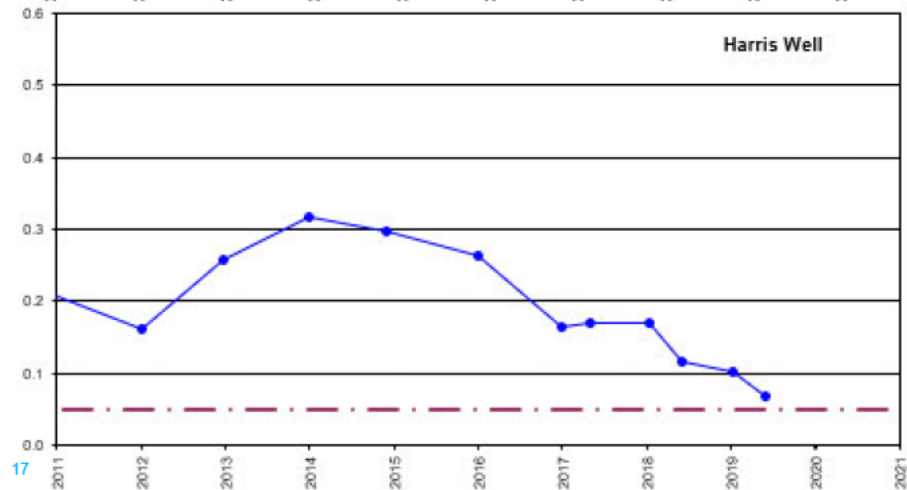
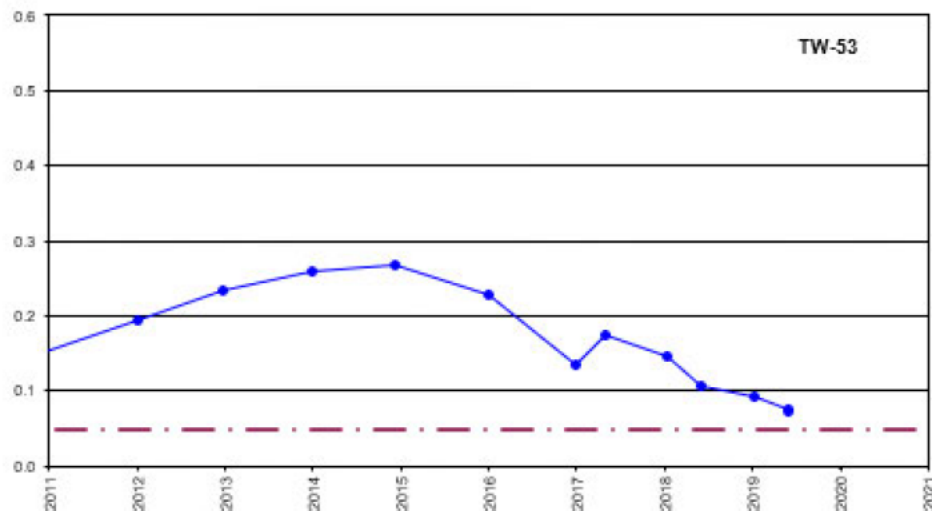
REV.  
A

FIGURE  
8-7





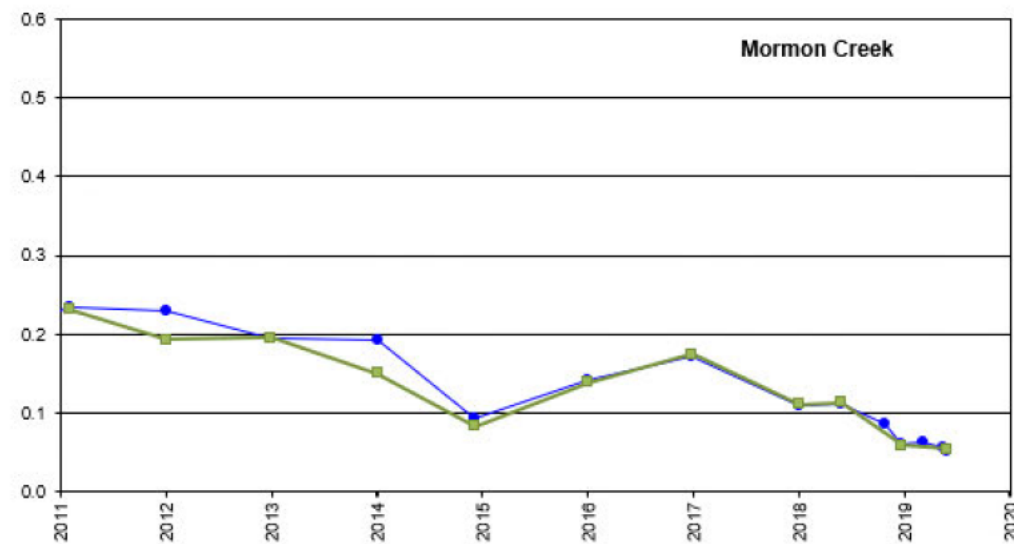
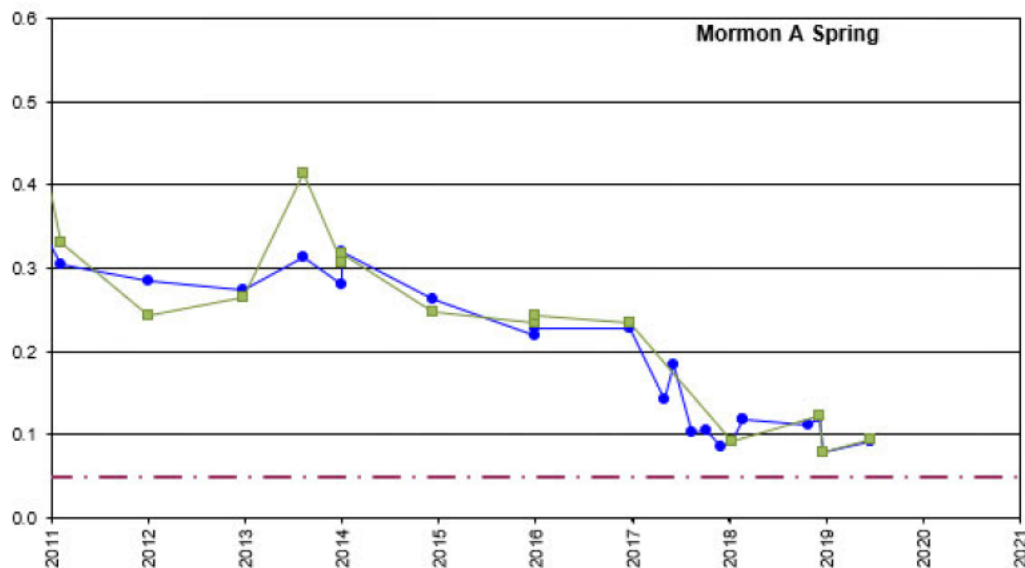
# Downgradient Test Wells Water Quality – Selenium



- Constituent Concentration (mg/L)
- Non-Detects
- Selenium Remediation Goal (0.05 mg/L)



## Downgradient Springs Water Quality – Selenium

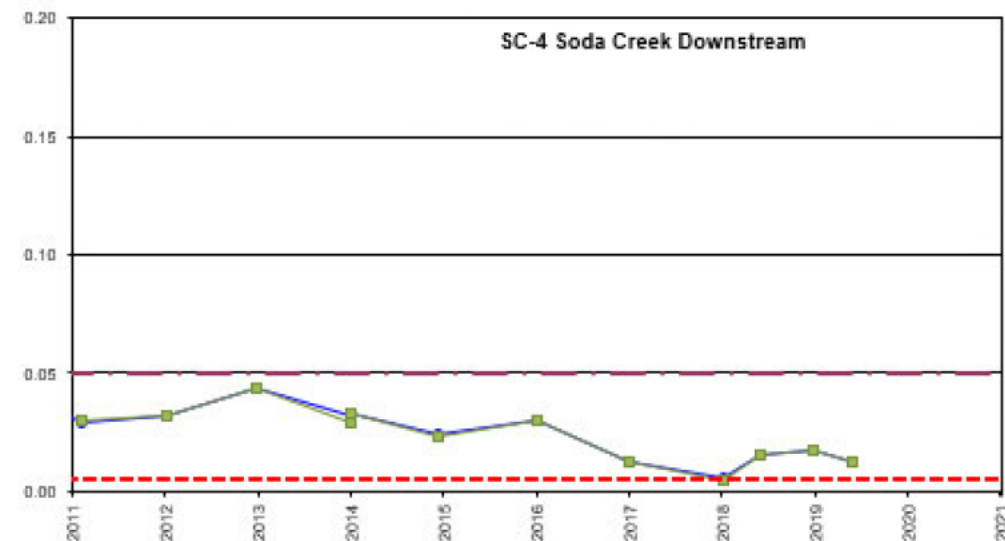


- Constituent Concentration (mg/L)
- Non-Detects
- Dissolved Constituent Concentration (mg/L)
- Dissolved Non-Detect (mg/L)
- • Selenium Remediation Goal (0.05 mg/L)

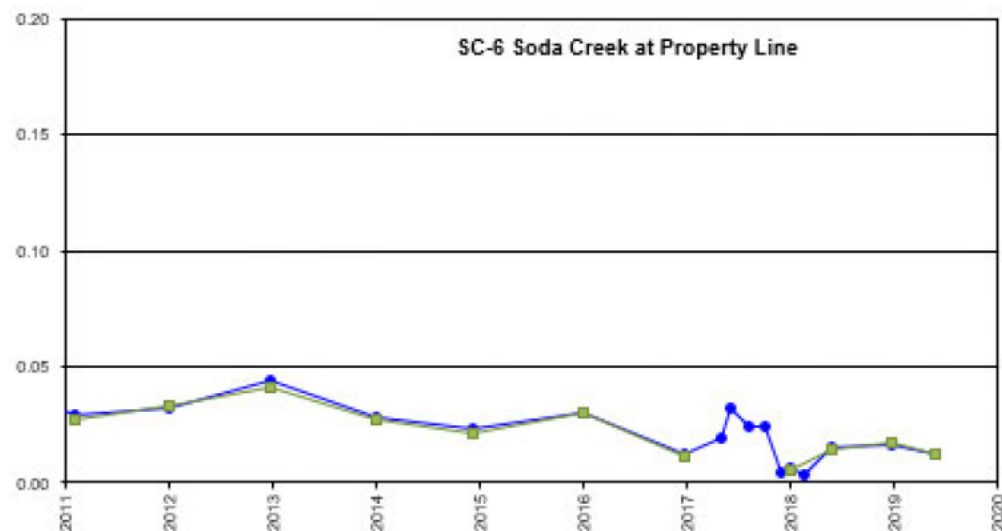


## Soda Creek Water Quality – Selenium

SC-4 Soda Creek Downstream



SC-6 Soda Creek at Property Line



- Constituent Concentration (mg/L)
- Non-Detects
- Dissolved Constituent Concentration (mg/L)
- Dissolved Non-Detect (mg/L)
- Selenium Remediation Goal (0.05 mg/L)
- - - Chronic Selenium Aquatic Standard (0.005 mg/L)

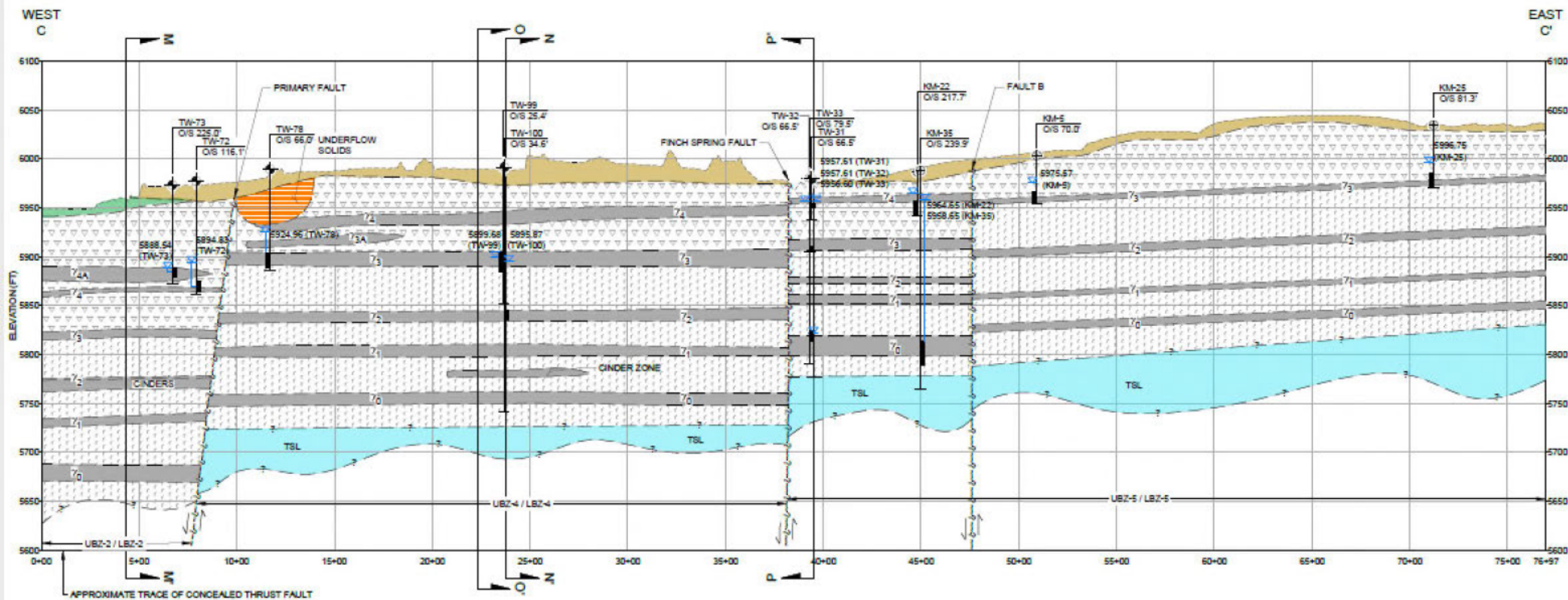


# UBZ-3 and UBZ-4

- // Annual Water Quality Sampling On-going
  - // June 2019
  - // Improved definition of plume areas
  - // Minor water quality changes
- // Monitoring of Effects of Plant Production Wells
  - // Monitoring period of ~ 1 yr
  - // Estimated aquifer properties from short-term pumping rate changes
  - // Identified area influenced by Plant Wells
  - // Identified Finch Spring Fault low permeability aquifer boundary
  - // Plant wells have little if any influence on UBZ-2
- // Pump testing planned for 2020 – TW-101



## Reinterpreted Hydrogeology – East Side of Plant





## June 2019 Groundwater Flow

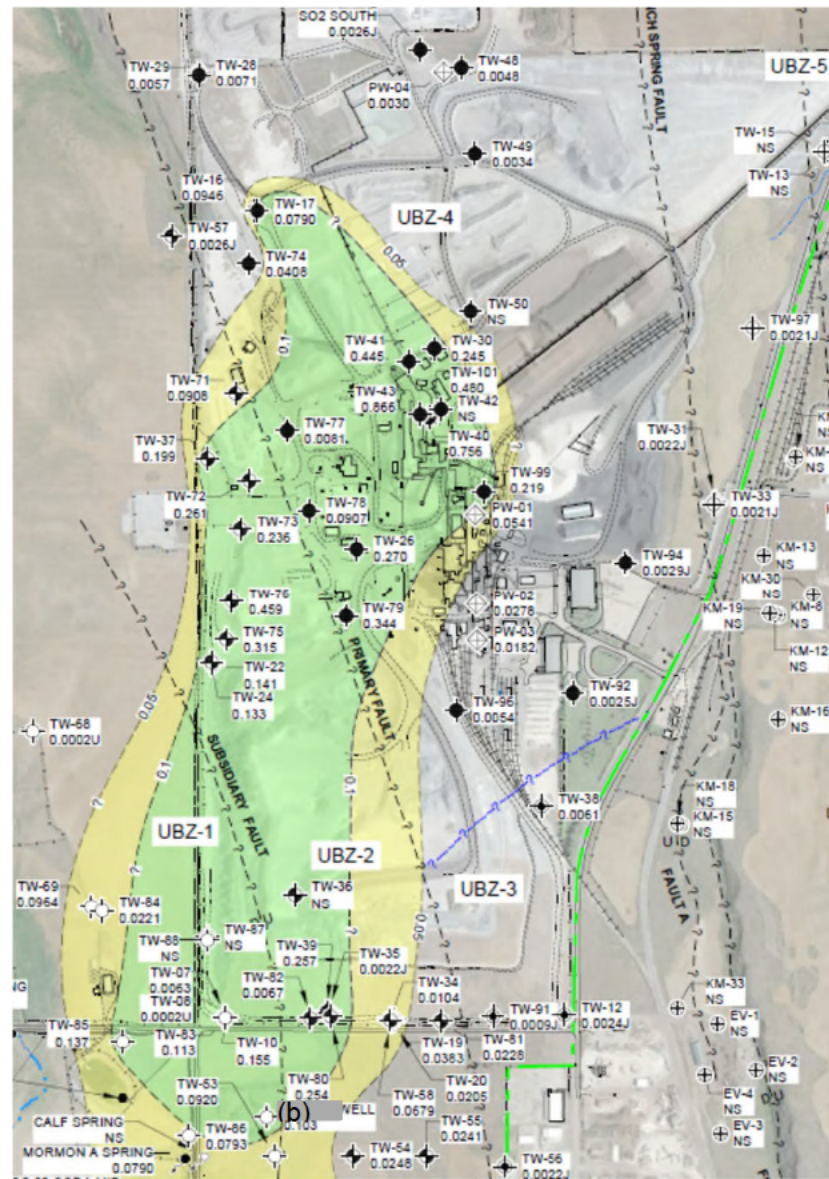






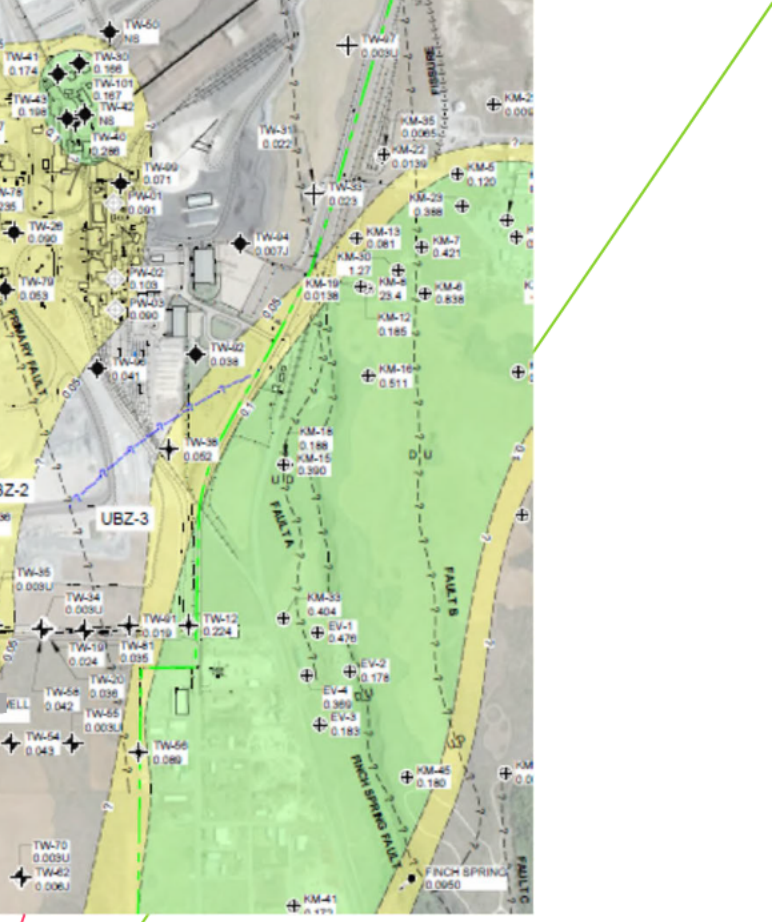
## June 2019 - Selenium

// No evidence of UBZ-4 selenium plume migrating beyond Plant Production Wells to UBZ-3





// Kerr McGee/Tronox Molybdenum  
plume not continuous with  
Monsanto/Bayer Mo plume

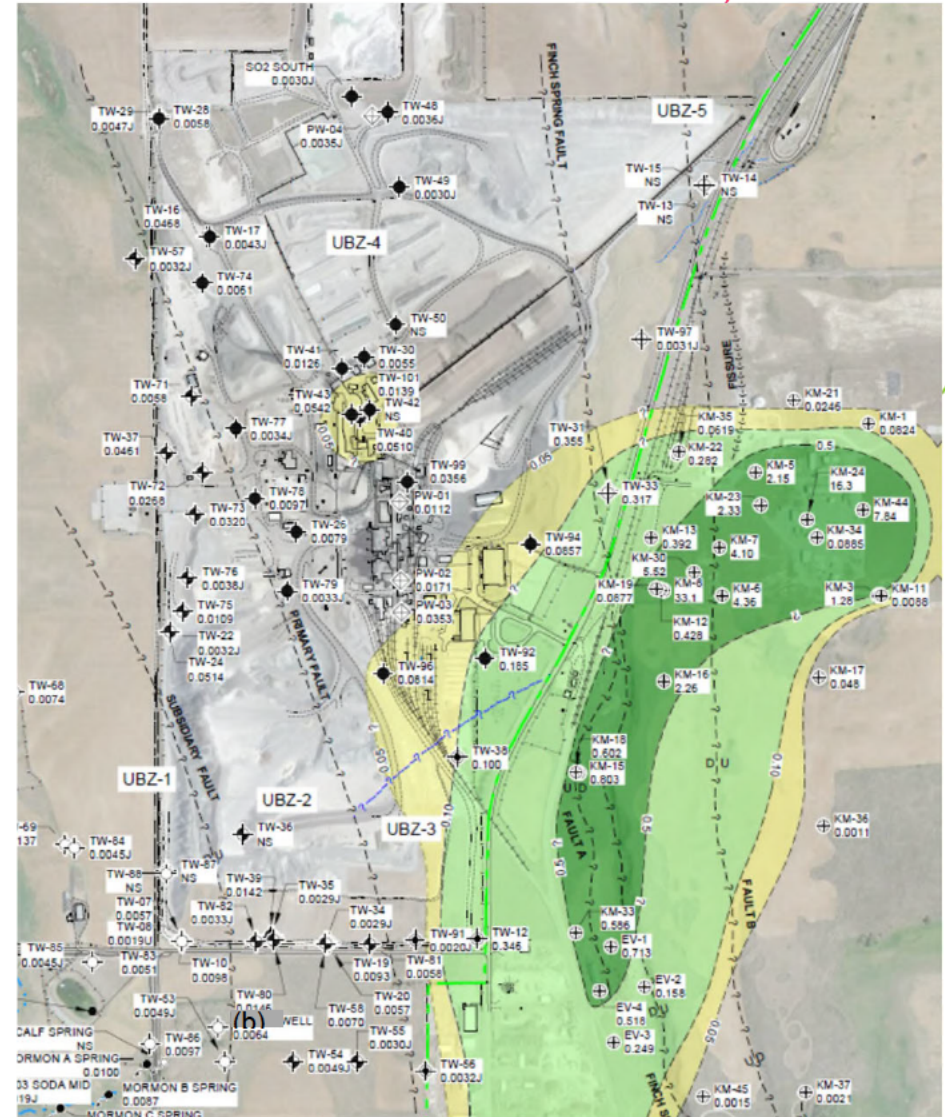






## June 2019 - Vanadium

// Kerr McGee/Tronox Vanadium plume not continuous with Monsanto/Bayer Vanadium plume



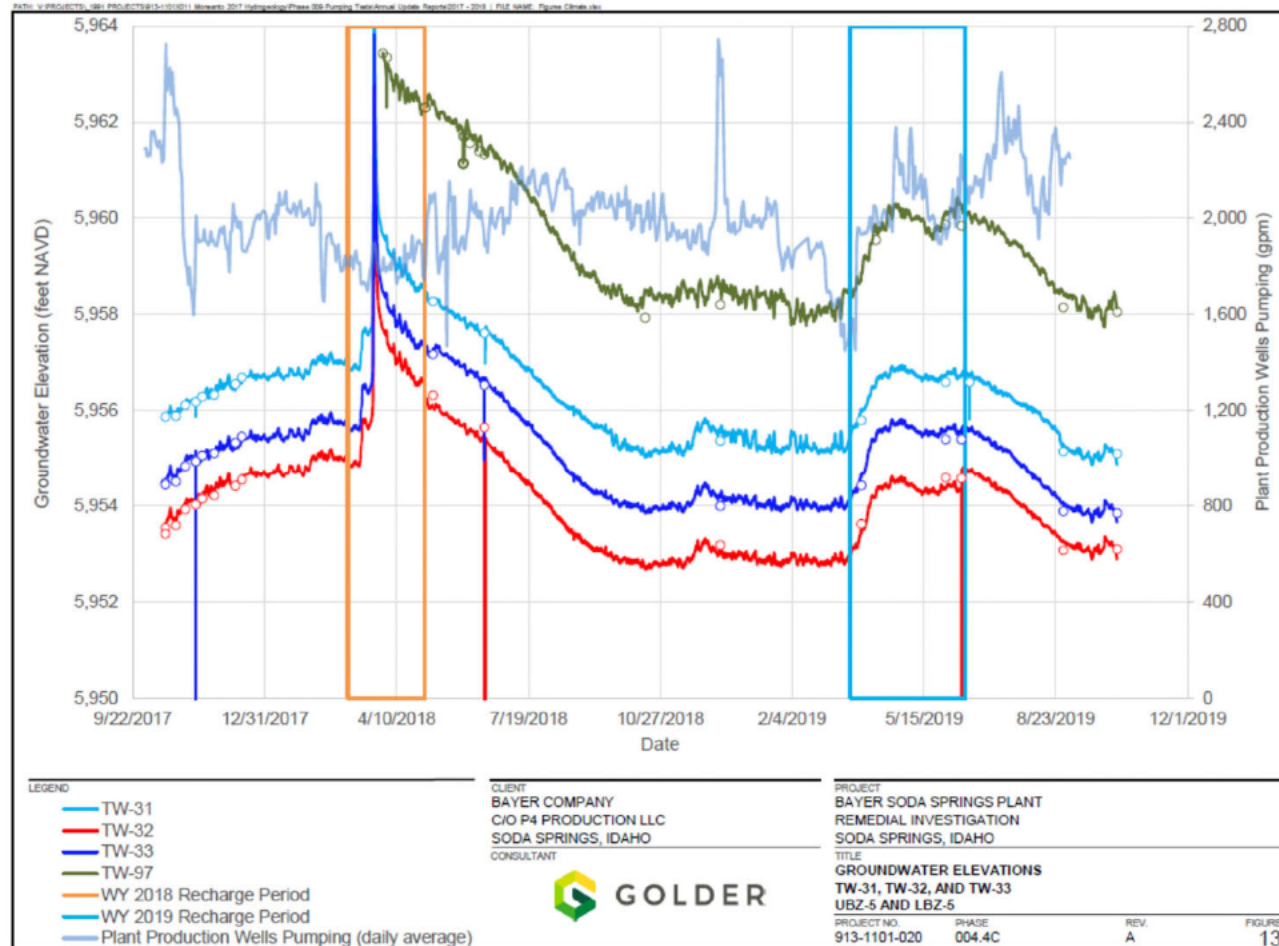


# Plant Well Monitoring – Central Plant Area



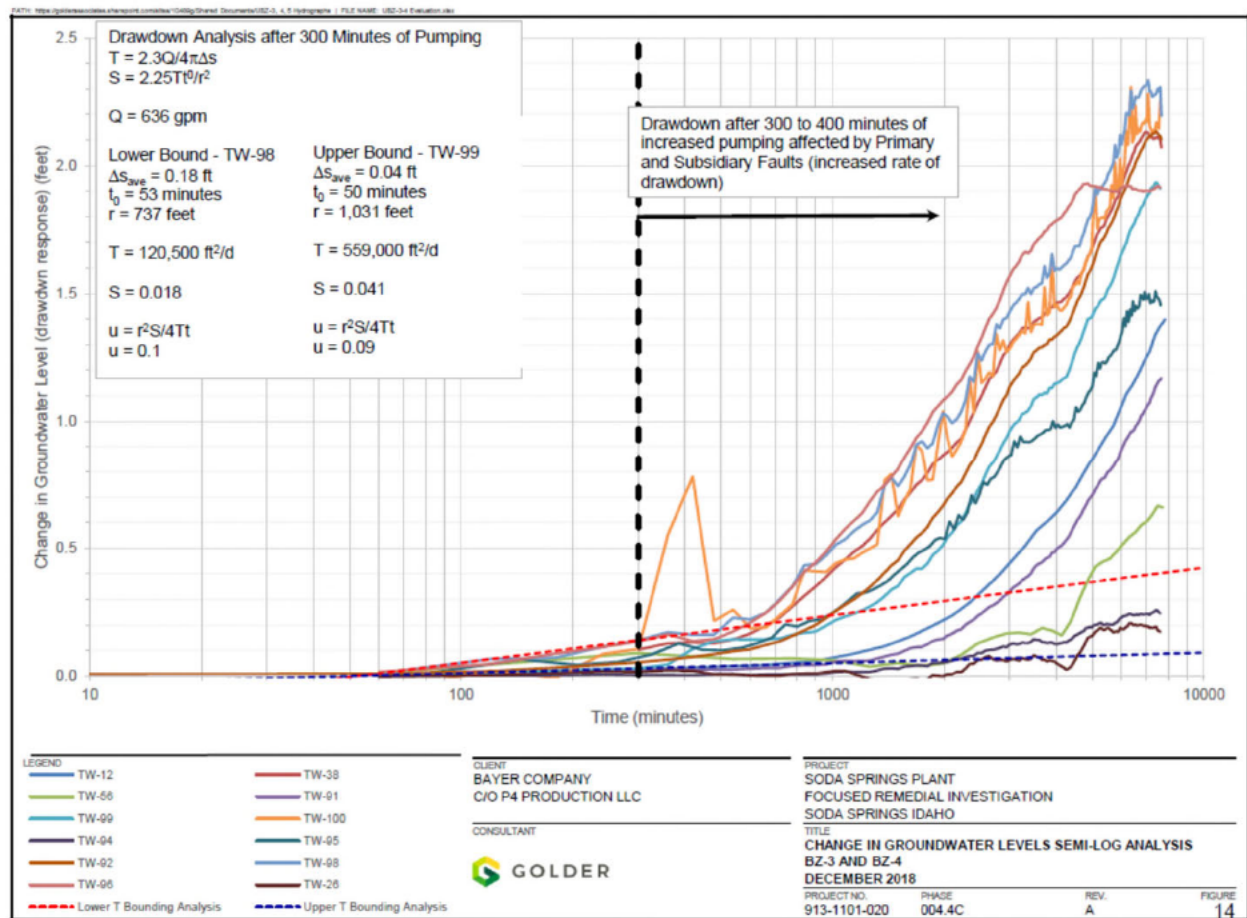


# Plant Well Monitoring – East of Finch Springs Fault





# Plant Well Monitoring – Short Term Pumping







# Summary

## // Groundwater quality in UBZ-1 and UBZ-2

- // Pump back wells are capturing significant portion of the plume originating from old UFS ponds
- // Leading to decreasing selenium, cadmium and nitrate concentrations south of Fence Line in groundwater and springs
- // Leading to decreasing selenium plume extent
- // No apparent effects on UBZ-3 Mo plume

## // Groundwater in UBZ-3 and UBZ-4

- // Finch Springs Fault forms low permeability boundary on eastern edge of Monsanto site
- // UBZ-3 and UBZ-4 – high transmissivity region bounded by faults to east and west
- // Plant Production Wells draw water from north to north-west.
- // Plant Production wells have little, if any influence on UBZ-2
- // Pump testing planned for 2020 – TW-101 near Hydroclarifier

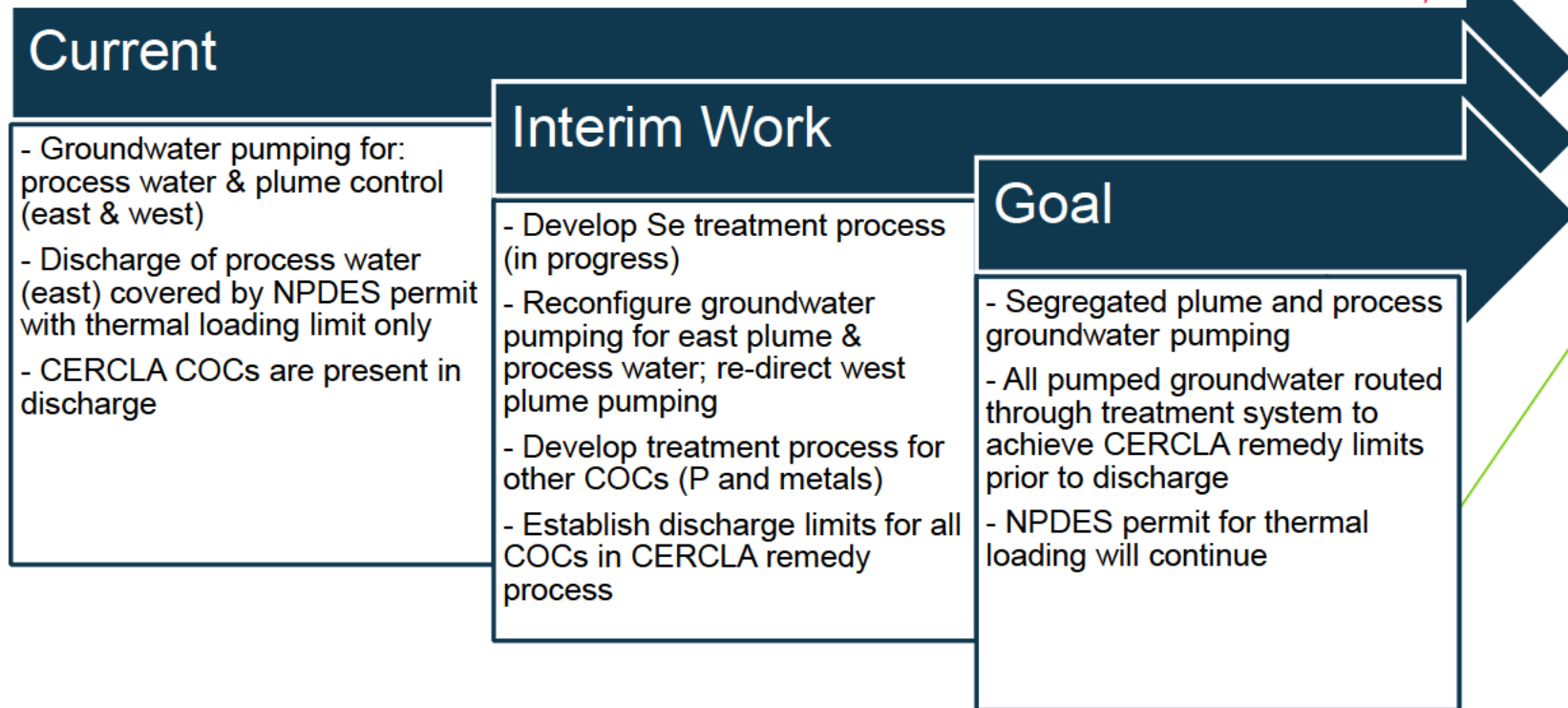


# *CERCLA-CWA* *Integration*



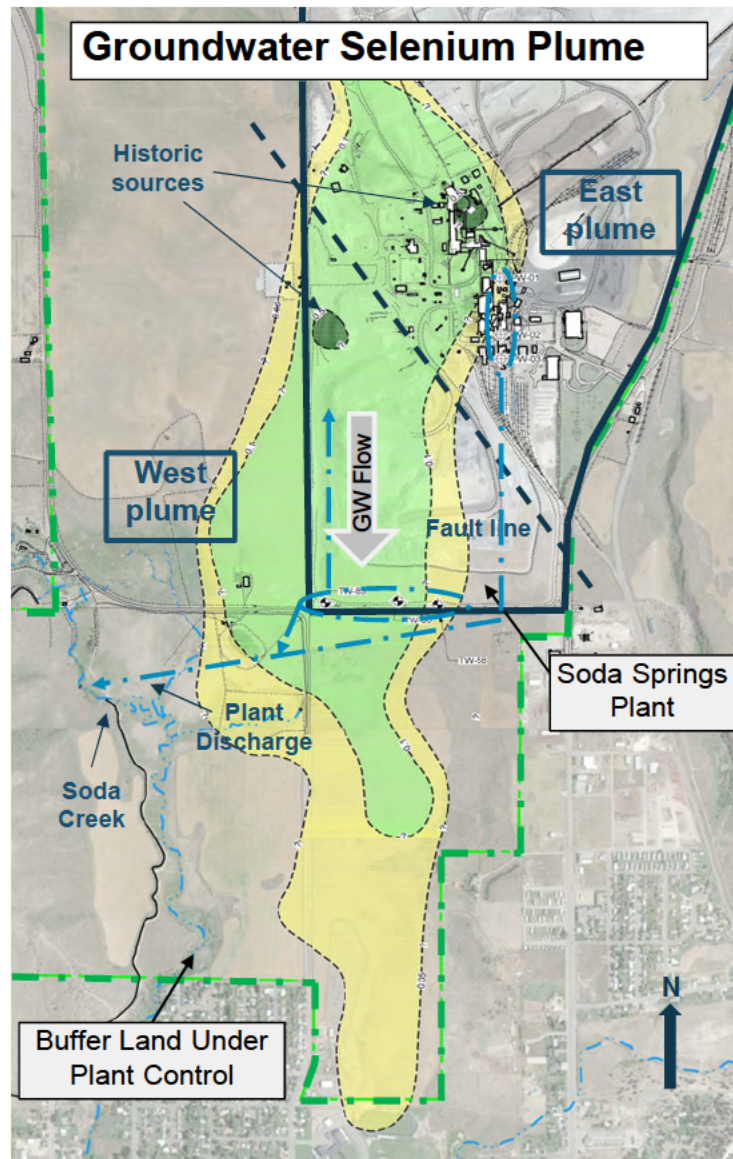


# Regulation of Discharge under CERCLA Remedial Action



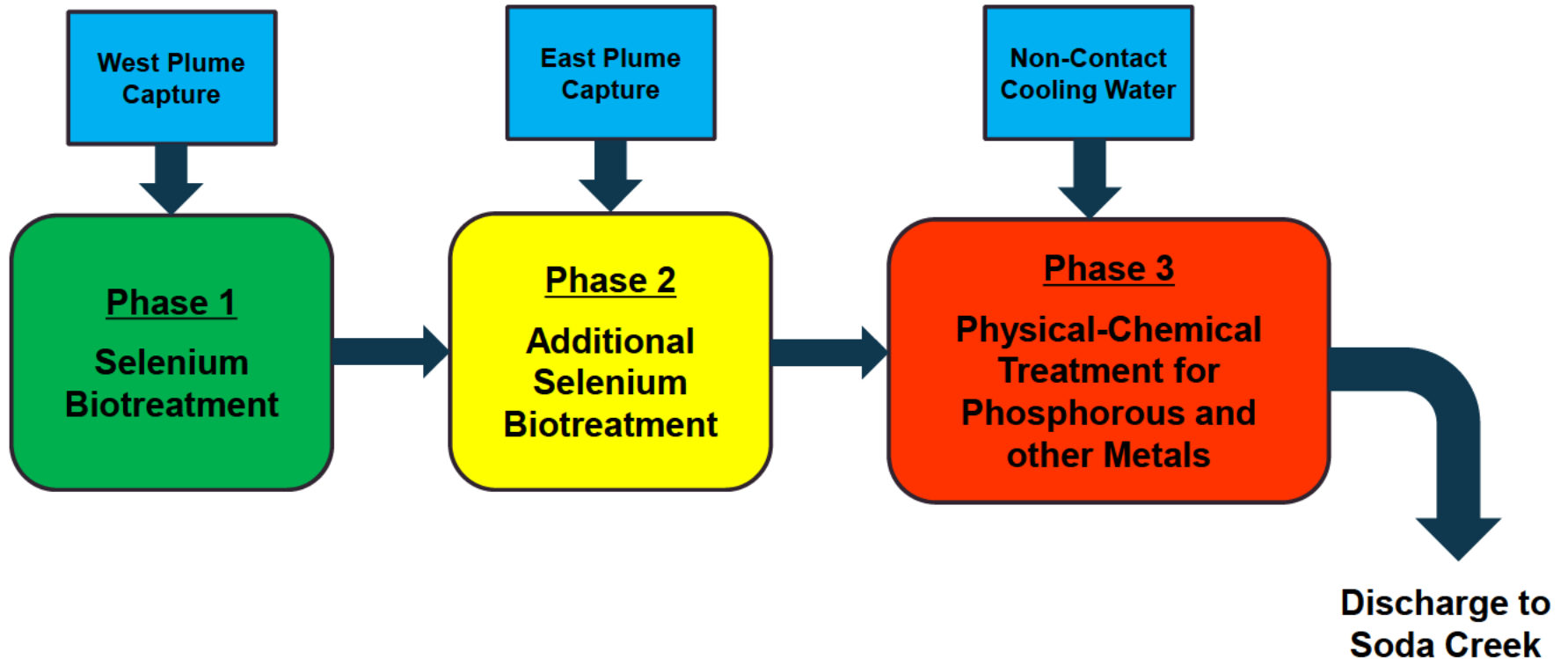


## Se Plume Map



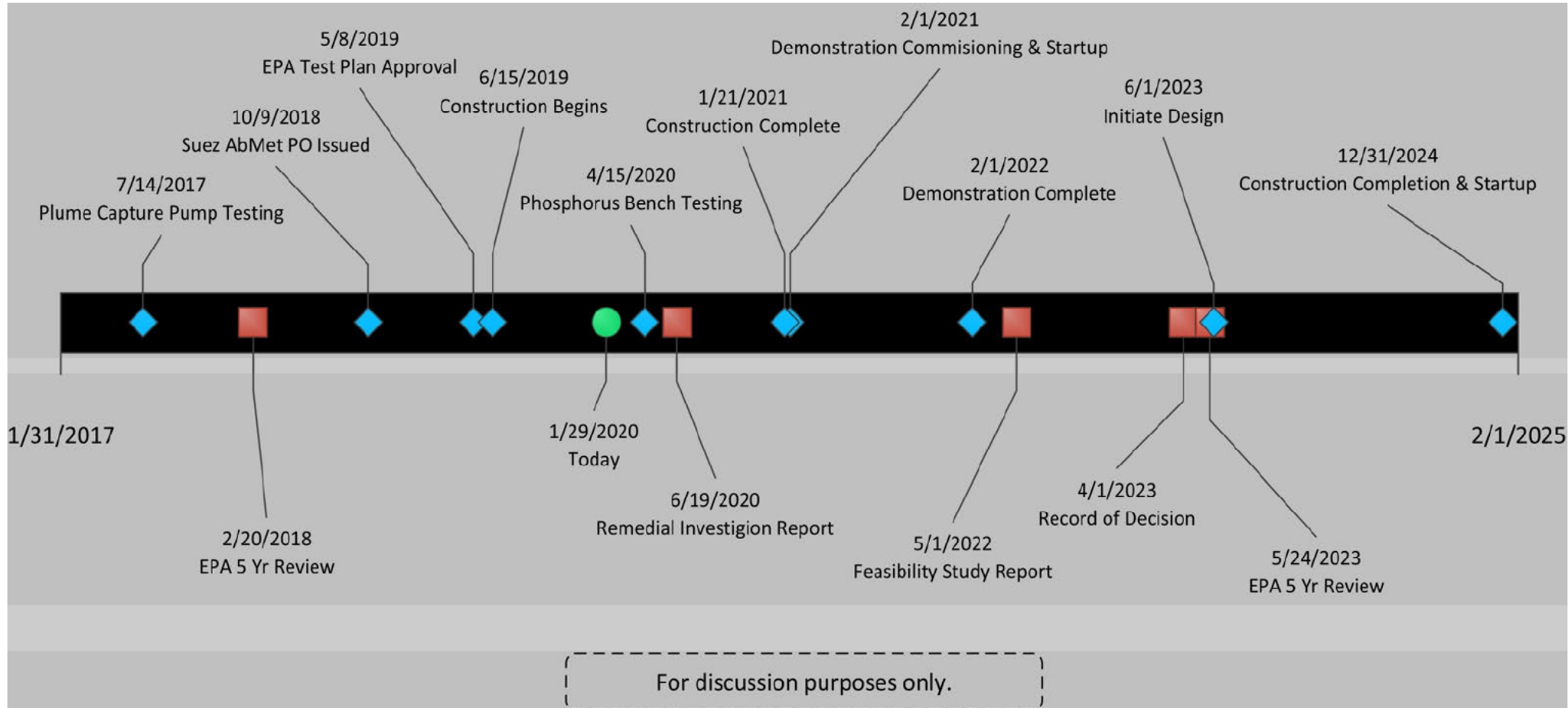


# Phases of Plume Capture and Water Treatment





# Project Timeline







# *Se Treatment Demonstration Status*





## Demo Unit Status

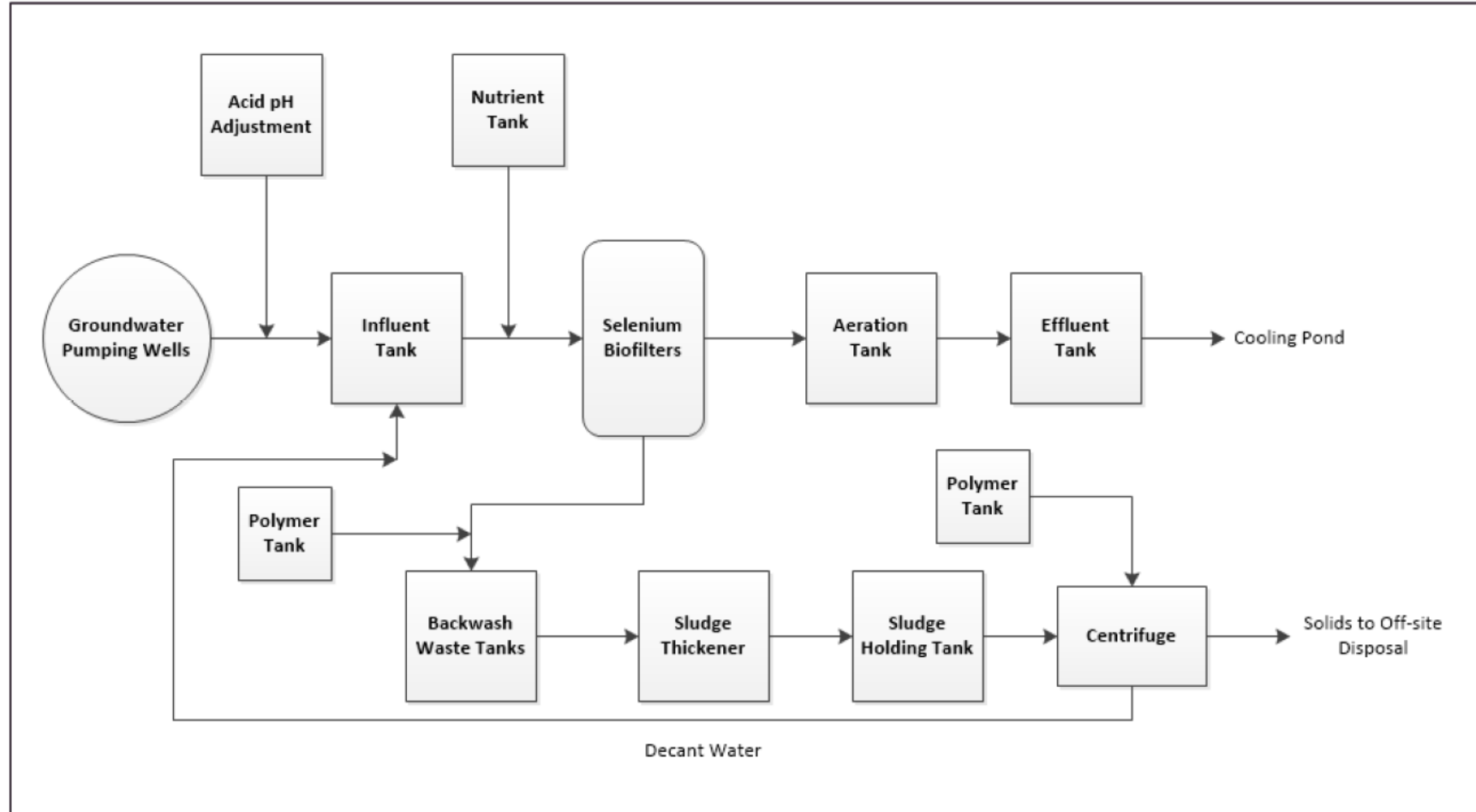
- // Building Shell: nearing completion with roofing and door installation underway
- // Mechanical, Electrical, & Plumbing Package: out for bid... PO Issue March 6, 2020
- // Long Lead Items:
  - // Suez (ordered & delivery started)
  - // Centrifuge (bid review)
  - // Sludge Thickener (bid review)
- // Utilities:
  - // Electrical (design complete & prep for bid)
  - // Natural Gas (delivered)
  - // Influent/Effluent Lines (in design)



**January 2020**

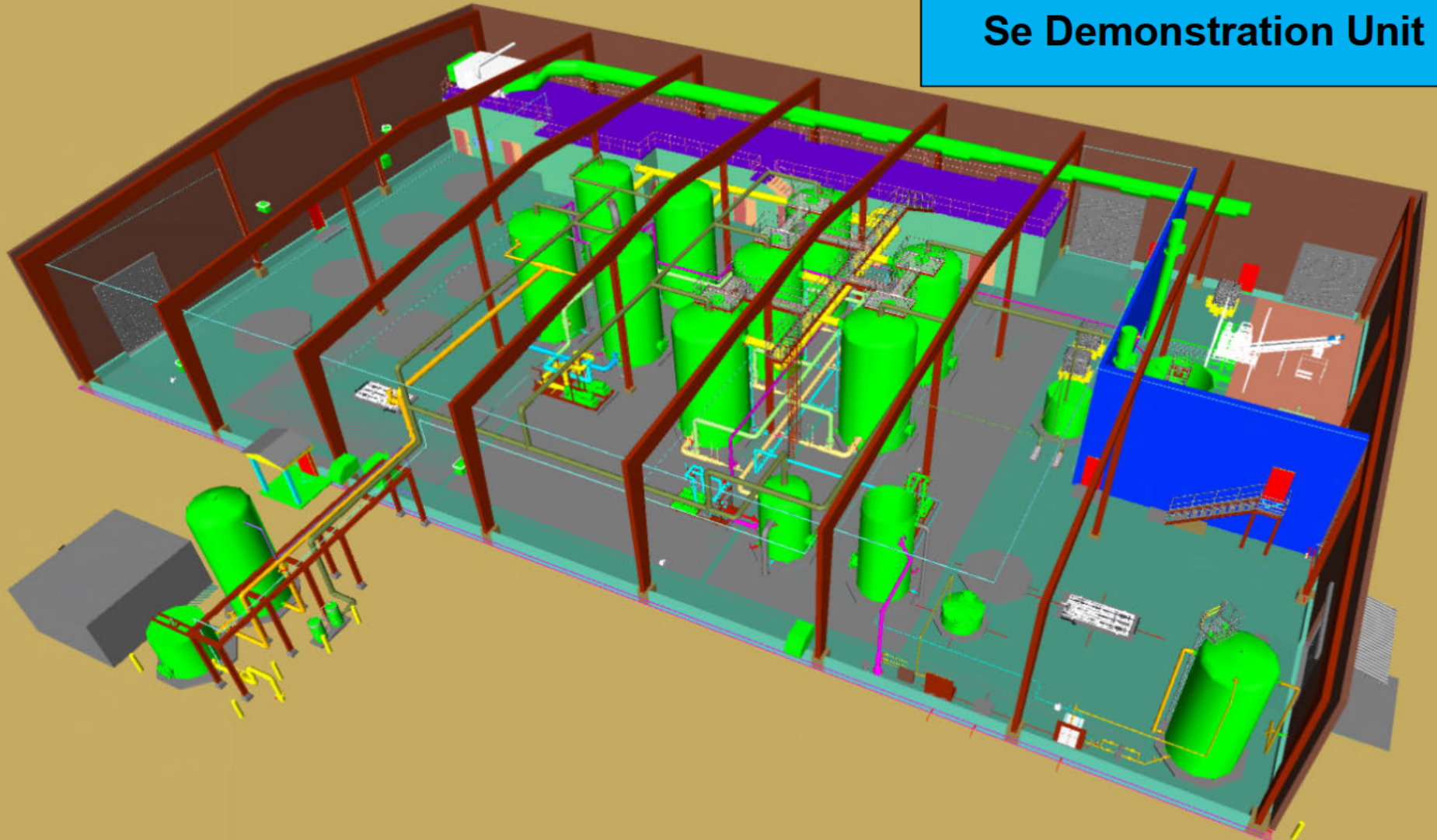


## Se Demonstration Unit - Block Flow





## Se Demonstration Unit





# *Discussion*







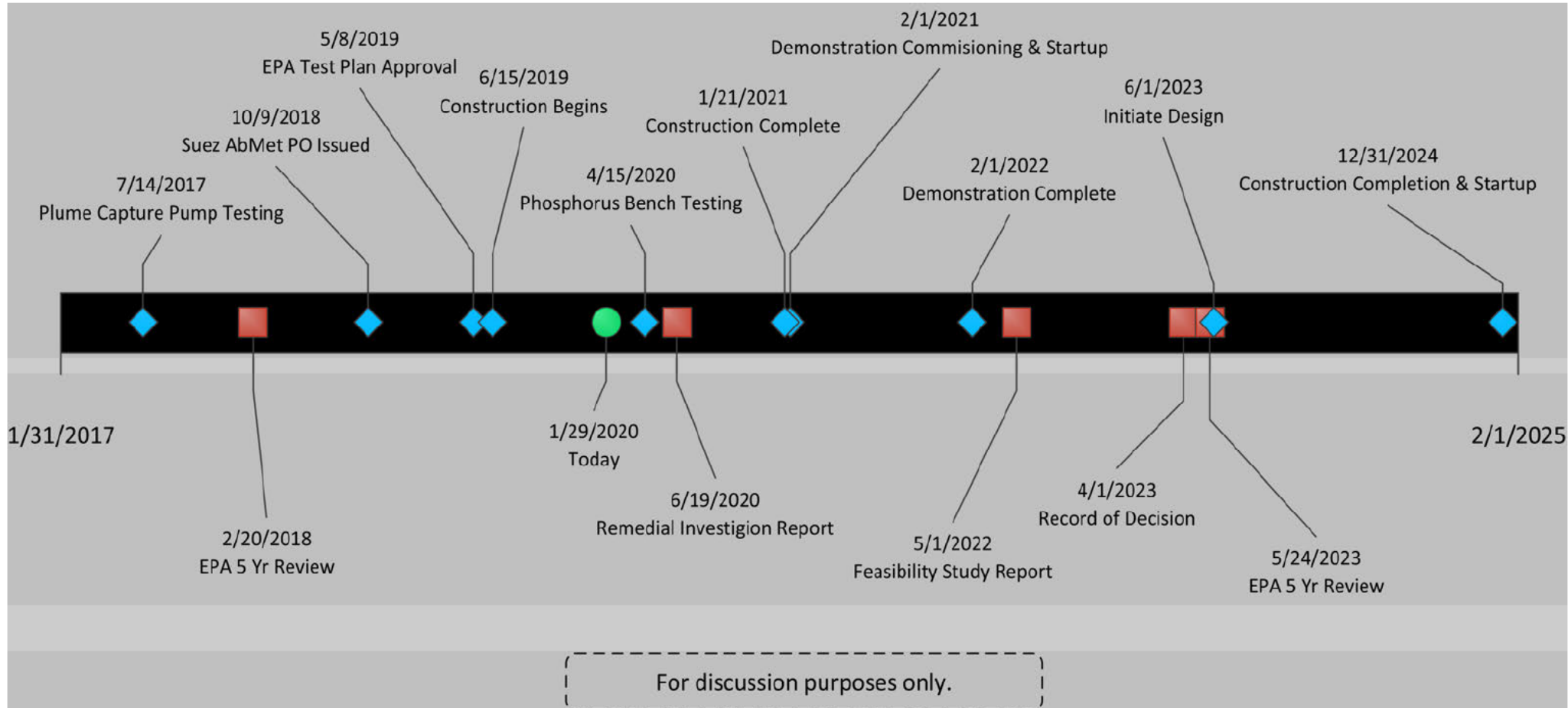
## Open Discussion/Planning

// Face-to-Face Meeting:

// Open Items/Comments/Questions:



# Project Timeline





*Thank you!*

